

STING NEMATODE ON CITRUS

R. P. Esser¹ and S. E. Simpson²

Three species of sting nematode (Belonolaimus spp.) have been associated with citrus in Florida. Belonolaimus gracilis Steiner, 1949 was first reported to be associated with citrus in 1953 (5). B. longicaudatus Rau, 1958, is most commonly associated with citrus. B. euthorchilus Rau, 1963, was detected once in a citrus planting in Marion County. During the early spreading decline surveys, sting nematode was detected in 16 of 147 spreading decline groves (3). In 1957 Christie stated, "Sting nematodes occur rather frequently around the roots of citrus trees and are often associated with root injury and lack of vigor" (2). Tarjan (6) eliminated sting nematode as a possible cause of young tree decline of citrus.

CITRUS HOSTS. Belonolaimus longicaudatus has been found associated with the following citrus hosts in Florida: Citrofortunella mitis (Blanco) J. Ingram and H. E. Moore (calamondin) [1]³, Citroncirus webberi J. Ingram and H. E. Moore 'Carrizo' (citrange) [12], Citrus sp. [89], C. aurantium L. [7], C. jambhiri, C. limon (L.) Burm. f. (lemon) [3], C. X nobilis Lour. 'Murcott' (tangor) on C. reticulata Blanco [1], C. X paradisi Macfady (grapefruit) [1], C. reticulata (tangerine) [2], C. sinensis (L.) Osbeck 'Hamlin' [1], C. sinensis 'Pineapple' on C. aurantium [2], C. sinensis 'Valencia' on C. aurantium [2], C. sinensis 'Valencia' on C. limon [1], and Poncirus trifoliata (L.) Raf. X C. X paradisi (citrumelo) [1].

GEOGRAPHIC DISTRIBUTION. Sting nematode has been associated with citrus plantings in the following Florida counties: Alachua, Brevard, Charlotte, Citrus, De Soto, Flagler, Hardee, Hernando, Hillsborough, Indian River, Lake, Lee, Manatee, Marion, Orange, Osceola, Pasco, Polk, Putnam, St. Lucie, Sarasota, Seminole, Sumter, and Volusia.

REGULATORY STATUS: California prohibits the entry of sting nematodes into the State.

SYMPTOMS: Aboveground symptoms on mature trees include twig dieback, leaf chlorosis, small fruit, and premature fruit drop. Root symptoms include necrosis, blinded root tips, and reduced feeder root production (4). Roots of Citrus jambhiri seedlings were stunted 2 months after adding sting nematode (1). In late 1983, one citrus nursery sting nematode infestation was detected involving seedling 'Carrizo' citrange root stocks with very unusual root symptoms. Roots from stunted unthrifty seedlings in the sting nematode infested area were severely distorted and almost devoid of feeder roots (Fig. 1). The root epidermis was irregularly swollen and easily sloughed. Roots from adjacent, healthy, sting nematode-free areas were healthy with abundant feeder roots (Fig. 2).

PATHOGENICITY: Suit & DuCharme (5) found that citrus roots attacked by sting nematode were short and thick. In one study, root-weights of Citrus jambhiri were reduced 23.7%, and foliage weights 16.2% in sting nematode-infested citrus (1). Standifer and Perry (4) examined grapefruit roots experimentally infested with sting nematodes and found damage consisting of large, lesioned, elliptical cavities in the roots.

¹Nematologist, Bureau of Nematology, P. O. Box 1269, Gainesville, FL 32602.

²Nematologist, Bureau of Pest Eradication and Control, 3027 Lake Alfred Road, Winter Haven, FL 33881.

³Figure within brackets indicates number of reports in Bureau of Nematology's file.

SURVEY AND DETECTION. In mature groves look for twig dieback, leaf chlorosis, premature fruit drop and short, thick roots. In citrus seedling plantings look for depressed areas of growth with stunted plants. Examine plant roots from such areas for abnormally malformed roots (Fig. 1). Submit a soil and root sample for analysis.

LITERATURE CITED.

1. Abu-Gharbieh, W. I., and V. G. Perry. 1970. Host differences among Florida populations of *Belonolaimus longicaudatus* Rau. J. Nematol. 2:209-216.
2. Christie, J. R. 1959. Plant nematodes: their bionomics and control. 256 pp. H. & W. B. Dreu Co., Jacksonville, FL.
3. DuCharme, E. P. 1954. Cause and nature of spreading decline of citrus. Proc. Fla. Hort. Soc. 67:75-81.
4. Standifer, M. S., and V. G. Perry. 1960. Some effects of sting and stubby root nematodes on grapefruit roots. Phytopathology 50:152-156.
5. Suit, R. F., and E. P. DuCharme. 1953. The burrowing nematode and other parasitic nematodes in relation to spreading decline of citrus. Plant Dis. Repr. 37:379-383.
6. Tarjan, A. C. 1973. An evaluation of plant nematodes as causal factors in citrus young tree decline. Proc. Soil & Crop Sci. Soc. Fla. 32:176-179.



Fig. 1. 'Carrizo' citrange seedling roots from areas infested only with sting nematodes.



Fig. 2. 'Carrizo' citrange seedling roots from areas free of sting and other phytoparasitic nematodes.